Claims

Claim 1. An isolated peptide consisting of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:1 to SEQ ID NO:213, SEQ ID NO:358 to SEQ ID NO:381, and SEQ ID NO:388 to SEQ ID NO:408.

Claim 2. An isolated polypeptide consisting of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:215 to SEQ ID NO:288 (excluding SEQ ID NO:228, SEQ ID NO:236, SEQ ID NO:261, and SEQ ID NO:269), SEQ ID NO:356, SEQ ID NO:357, SEQ ID NO:385, and SEQ ID NO:386.

Claim 3. An isolated peptide consisting of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:1 to SEQ ID NO:213, SEQ ID NO:358 to SEQ ID NO:381, and SEQ ID NO:388 to SEQ ID NO:408, wherein the peptide is recognized by a cytotoxic T lymphocyte and/or induces a cytotoxic T lymphocyte.

Claim 4. The peptide according to claim 3, wherein said peptide is recognized by a cytotoxic T lymphocyte in an HLA-A2-restricted manner or HLA-A26-restricted manner and/or induces a cytotoxic T lymphocyte in an HLA-A2-restricted manner or HLA-A26-restricted manner.

Claim 5. An isolated polypeptide consisting of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:214 to SEQ ID NO:288, SEQ ID NO:356, SEQ ID NO:357, and SEQ ID NO:385 to SEQ ID NO:387, wherein the polypeptide is recognized by a cytotoxic T lymphocyte and/or induces a cytotoxic T lymphocyte.

Claim 6. The polypeptide according to claim 5, wherein

said polypeptide is recognized by the cytotoxic T lymphocyte in an HLA-A2-restricted manner or HLA-A26-restricted manner and/or induces the cytotoxic T lymphocyte in an HLA-A2-restricted manner or HLA-A26-restricted manner.

Claim 7. A pharmaceutical composition comprising one or more of peptides that consist of an amino acid sequence selected from the group consisting of any of one of SEQ ID NO:1 to SEQ ID NO:213, SEQ ID NO:358 to SEQ ID NO:381, and SEQ ID NO:388 to SEQ ID NO:408, and/or, one or more of polypeptides that consist of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:214 to SEQ ID NO:288, SEQ ID NO:356, SEQ ID NO:357, and SEQ ID NO:385 to SEQ ID NO:387; and a pharmaceutically acceptable carrier.

Claim 8. A cancer vaccine comprising an immunoprotective effective amount of one or more of peptides that consist of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:1 to SEQ ID NO:213, SEQ ID NO:358 to SEQ ID NO:381, and SEQ ID NO:388 to SEQ ID NO:408, and/or, one or more of polypeptides that consist of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:214 to SEQ ID NO:288, SEQ ID NO:356, SEQ ID NO:357, and SEQ ID NO:385 to SEQ ID NO:387; and a pharmaceutically acceptable carrier.

Claim 9. The cancer vaccine according to claim 8, wherein the vaccine is used for treating one or more of cancers selected from the group consisting of colon cancer, esophageal cancer, oral squamous cell cancer, renal cancer, pulmonary cancer, gynecological cancer, and prostate cancer.

Claim 10. A method for inducing a cytotoxic T lymphocyte, wherein the method comprises contacting peripheral blood mononuclear cells with one or more of peptides that consist of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:1 to SEQ ID NO:213, SEQ ID NO:358 to SEQ ID NO:381, and SEQ ID NO:388 to SEQ ID NO:408, and/or, one or more of polypeptides that consist of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:214 to SEQ ID NO:288, SEQ ID NO:356, SEQ ID NO:357, and SEQ ID NO:385 to SEQ ID NO:387.

Claim 11. An isolated polynucleotide encoding a peptide or polypeptide consisting of an amino acid sequence selected from the group consisting of any one of SEQ ID NO:1 to SEQ ID NO:288, SEQ ID NO:356 to SEQ ID NO:381, and SEQ ID NO:385 to SEQ ID NO:408, or a complementary strand thereof.

Claim 12. An isolated polynucleotide consisting of a nucleotide sequence selected from the group consisting of any one of SEQ ID NO:290 to SEQ ID NO:355 (excluding SEQ ID NO:299 and SEQ ID NO:332) and SEQ ID NO:382 to SEQ ID NO:384, or a complementary strand thereof.

Claim 13. An isolated polynucleotide consisting of a nucleotide sequence selected from the group consisting of any one of SEQ ID NO:289 to SEQ ID NO:355 and SEQ ID NO:382 to SEQ ID NO:384, or a complementary strand thereof, wherein a polypeptide encoded by the polynucleotide induces a cytotoxic T lymphocyte and/or is recognized by a cytotoxic T lymphocyte.

Claim 14. The polynucleotide or the complementary strand thereof according to claim 13, wherein said polypeptide induces a

cytotoxic T lymphocyte in an HLA-A2-restrcited manner or HLA-A26-restricted manner and/or is recognized by a cytotoxic T lymphocyte in an HLA-A2-restrcited manner or HLA-A26-restricted manner.

Claim 15. An isolated polynucleotide that hybridizes to the polynucleotide or the complementary strand thereof according to any one of claims 11 to 14 under stringent conditions.

Claim 16. A recombinant vector comprising the polynucleotide or the complementary strand thereof according to any one of claims 11 to 14, or a polynucleotide that hybridizes to said polynucleotide or the complementary strand thereof under stringent conditions.

Claim 17. The recombinant vector according to claim 16, wherein the recombinant vector is a recombinant expression vector.

Claim 18. A transformant transformed with a recombinant vector or a recombinant expression vector, wherein the recombinant vector or the recombinant expression vector comprises the polynucleotide or the complementary strand thereof according to any one of claims 11 to 14, or a polynucleotide that hybridizes to said polynucleotide or the complementary strand thereof under stringent conditions.

Claim 19. A method for producing a polypeptide, wherein the method comprises culturing a transformant transformed with the recombinant vector according to claim 17.

Claim 20. An antibody immunologically recognizing the peptide according to claim 1, 3, or 4, or the polypeptide according to claim 2, 5, or 6.

Claim 21. A method for screening for a compound that enhances recognition of the peptide according to claim 4 or the polypeptide according to claim 6 at least by an HLA-A2-restricted or HLA-A26-restricted cytotoxic T lymphocyte, wherein said method comprises contacting said peptide or said polypeptide, with a compound; and determining whether said compound enhances said recognition by measuring IFN-γ production from said cytotoxic T lymphocytes.

Claim 22. A method for screening for a compound that enhances recognition of the peptide according to claim 4 at least by an HLA-A2-restricted or HLA-A26-restricted cytotoxic T lymphocyte, wherein said method comprises contacting $HLA\text{-}A2^+$ cells or $HLA\text{-}A26^+$ cells which have been pulsed with said peptide, with said cytotoxic T lymphocytes which recognize a complex of the peptide and HLA-A2 molecule or a complex of the peptide and HLA-A26 molecule in the presence or absence of a compound; and determining whether said compound enhances said recognition by measuring IFN-γ production from said cytotoxic T lymphocytes.

Claim 23. A method for screening for a compound that enhances recognition of the peptide according to claim 4 at least by an HLA-A2-restricted or HLA-A26-restricted cytotoxic T lymphocyte, wherein said method comprises contacting $HLA\text{-}A2^+$ cells or $HLA\text{-}A26^+$ cells into which the polynucleotide according to claim 14 have been transfected, with said cytotoxic T lymphocytes which recognize a complex of the peptide and HLA-A2 molecule or a complex of the peptide and HLA-A26 molecule in the presence or absence of a compound; and determining whether said compound enhances said recognition by

measuring IFN-γ production from said cytotoxic T lymphocytes.

Claim 24. A compound that is obtained by the screening method according to claim 21.

Claim 25. A compound that enhances recognition of at least one of the peptide according to claim 4 and/or the polypeptide according to claim 6 by an HLA-A2-restricted or HLA-A26-restricted cytotoxic T lymphocyte through interaction with the same.

Claim 26. A compound that enhances the expression of the polynucleotide or the complementary strand thereof according to any one of claims 11 to 14 through interaction with the same.

Claim 27. A pharmaceutical composition used for treating cancer, the composition comprising at least one member selected from the group consisting of the peptides according to claim 4, the polypeptides according to claim 6, the polynucleotide or the complementary strand thereof according to any of claims 11 to 14, or a polynucleotide that hybridizes to said polynucleotide or the complementary strand thereof under stringent conditions, a recombinant vector or recombinant expression vector comprising said polynucleotide or the complementary strand thereof, a transformant comprising said recombinant vector or recombinant expression vector, and an antibody that immunologically recognizes said peptide or polypeptide; and a pharmaceutically acceptable carrier.

Claim 28. A method for measuring quantitatively or qualitatively the peptide according to claim 4, or the polypeptide according to claim 6, or the polynucleotide or the complementary strand thereof according to any one of claims 11 to 14, or a polynucleotide that hybridizes to said polynucleotide or the

complementary strand thereof under stringent conditions, wherein said method comprises detecting the presence of or determining the amount of said peptide or said polypeptide or said polynucleotide in a sample.

Claim 29. The measuring method according to claim 28, wherein the method is used in an examination for a cancer disease.

Claim 30. A reagent kit comprising at least one member selected from a group consisting of the peptide according to claim 4, the polypeptide according to claim 6, an antibody that immunologically recognizes said peptide or polypeptide, the polynucleotide or the complementary strand thereof according to claims 11 to 14, or a polynucleotide that hybridizes to said polynucleotide or the complementary strand thereof under stringent conditions, a recombinant vector or recombinant expression vector comprising said polynucleotide or the complementary strand thereof, a transformant comprising said recombinant vector or recombinant expression vector; and a buffered solution.

Claim 31. The reagent kit according to claim 30, wherein the reagent kit is used in diagnosing cancer disease.

Claim 32. A method for treating cancer comprising *in vivo* administering the cancer vaccine according to claim 8 or 9 to a patient afflicted with cancer.

Claim 33. A method for treating cancer comprising *in vivo* administering the cancer vaccine according to claim 8 or 9 to a patient afflicted with cancer, in an amount sufficient to induce cytotoxic

T lymphocytes in said patient which recognize a complex of the peptide according to claim 4 and HLA-A2 molecule or a complex of said peptide and HLA-A26 molecule, and thereby to lyse cancer cells in said patient.

Claim 34. A method for treating a cancer patient comprising treating peripheral blood mononuclear cells which have been isolated from said patient with the cancer vaccine according to claim 8 or 9; and administering the thus treated peripheral blood mononuclear cells to said patient.

Claim 35. A method for treating a cancer patient comprising treating peripheral blood mononuclear cells which have been isolated from said patient with the cancer vaccine according to claim 8 or 9 in an amount sufficient to induce cytotoxic T lymphocytes in said patient which recognize a complex of the peptide according to claim 4 and HLA-A2 molecule or a complex of said peptide and HLA-A26 molecule, and thereby lyse cancer cells in said patient; and administering the thus treated peripheral blood mononuclear cells to said patient.

Claim 36. A method for diagnosing cancer comprising measuring quantitatively or qualitatively the peptide according to claim 4, or the polypeptide according to claim 6, or the polynucleotide or the complementary strand thereof according to any one of claims 11 to 14, or a polynucleotide that hybridizes to said polynucleotide or the complementary strand thereof under stringent conditions.